

**EPA Superfund
Record of Decision:**

**USN AIR STATION CECIL FIELD
EPA ID: FL5170022474
OU 12
JACKSONVILLE, FL
09/26/2002**

**Record Of Decision
Operable Unit 12, Site 42
Former Boiler House/Steam Plant
and General Storehouse**



**Naval Air Station Cecil Field
Jacksonville, Florida**

**Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0226**

July 2002

RECORD OF DECISION
OPERABLE UNIT 12, SITE 42
FORMER BOILER HOUSE/STEAM PLANT AND GENERAL STOREHOUSE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0226

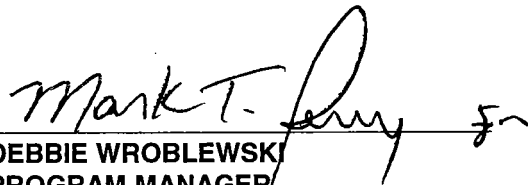
JULY 2002

PREPARED UNDER THE SUPERVISION OF:

A handwritten signature in black ink, reading "Mark Speranza", written over a horizontal line.

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APPROVED FOR SUBMITTAL BY:

A handwritten signature in black ink, reading "Mark T. Perry", written over a horizontal line. To the right of the signature is a small handwritten mark that looks like "5~".

**DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**



CERTIFICATION OF TECHNICAL DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: July 24, 2002

COMPANY CERTIFICATION AUTHORIZATION NUMBER:

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NAME AND TITLE OF CERTIFYING OFFICIAL:

Mark Speranza, P. E.
Task Order Manager

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/kg	Microgram(s) per kilogram
µg/L	Microgram(s) per liter
ABB-ES	ABB Environmental Services, Inc.
ARAR	Applicable or relevant and appropriate requirement
BaP	Benzo(a) pyrene
BaPEq	Benzo(a) pyrene equivalent
BCT	BRAC Cleanup Team
bgs	Below ground surface
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
COC	Chemical of concern
COPC	Chemical of potential concern
cPAH	Carcinogenic PAH
EBS	Environmental Baseline Survey
EE	Envirodyne Engineers
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFA	Federal Facility Agreement
FS	Feasibility Study
ft2	Square feet
G&M	Geraghty and Miller, Inc.
GCTL	Groundwater Cleanup Target Level (FDEP's)
HLA	Harding Lawson Associates
HSWA	Hazardous and Solid Waste Amendments
IAS	Initial Assessment Study
IBDS	Inorganic Background Data Set
IR	Installation Restoration
IRA	Interim Removal Action
mg/kg	Milligram(s) per kilogram
mg/L	Milligram(s) per liter
NAGS	Naval Air Gunnery School
NAS	Naval Air Station
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No further action
NPL	National Priorities List
OGC	Old Golf Course
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAH	Polynuclear aromatic hydrocarbon
PRE	Preliminary Risk Evaluation
PRG	Preliminary Remedial Goal
PSC	Potential Source of Contamination
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SAOR	Sampling and Analysis Outline and Report
SARA	Superfund Amendments and Reauthorization Act
SCTL	Soil Cleanup Target Level (FDEP's)
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TEF	Toxicity Equivalence Factor (U. S. EPA's)
TRPH	Total recoverable petroleum hydrocarbons

TtNUS	Tetra Tech NUS, Inc.
U. S. EPA	United States Environmental Protection Agency
UCL	Upper confidence level
UST	Underground storage tank
YWWA	Yellow Water Weapons Area

1.0 DECLARATION OF THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION

Operable Unit (OU) 12, Site 42 consists of the contaminated soil identified at the Former Boiler House/Steam Plant and General Warehouse at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida (U. S. EPA ID FL5 170 022 474). Site 42 is located in the south-central portion of the Yellow Water Weapons Area (YWWA).

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial action for OU 12, Site 42 at NAS Cecil Field. The remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act (CERFA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 Code of Federal Regulations (CFR) 300]. This decision document was prepared in accordance with Section 8.0 of the United States Environmental Protection Agency (U. S. EPA) final guidance for the preparation of decision documents (U. S. EPA, 1999a).

The U. S. EPA and the Florida Department of Environmental Protection (FDEP) concur with the selected remedy.

1.3 DESCRIPTION OF THE SELECTED REMEDY

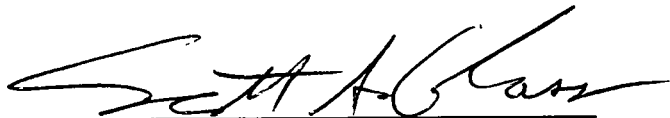
This ROD is the final action for OU 12, Site 42. Final RODs have been approved for OU 1 through OU 4; OU 5, Site 14; OU 6 through OU 8; and OU 9, Sites 36 and 37. A Remedial Investigation (RI), Baseline Risk Assessment (BRA), and Feasibility Study (FS) have also been prepared for OU 5, Site 15 but the FS is currently being re-evaluated. RI and FS reports have been completed for OU 11, Site 45, and decision documents are being prepared for that site. An Action Memorandum is being prepared for OU 5, Site 49. RI and FS reports are in progress for OU 9, Sites 57 and 58; OU 10, Site 21; and OU 10, Site 25. Interim Removal Actions (IRAs) have been completed for OU 12, Sites 32, 42, 44, and Old Golf Course (OGC), and decisions documents are being prepared for these sites.

The NAS Cecil Field Base Realignment and Closure (BRAC) Cleanup Team (BCT) agreed that no further action (NFA) is required to ensure protection of human health and the environment at OU 12, Site 42. Consequently, no active remediation or long-term monitoring will be conducted at OU 12, Site 42.

1.4 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, is cost-effective, and complies with Federal and State applicable or relevant and appropriate requirements (ARARS). The previous IRA at OU 12, Site 42 has eliminated the need for further action at that site. Because no contaminant remains on-site, five-year reviews on the site are not required.

1.5 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF REMEDY



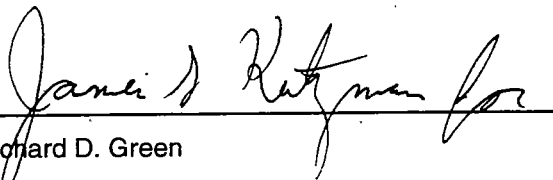
Scott A. Glass, P.E.

Base Realignment and Closure

Environmental Coordinator

7/26/02

Date



Richard D. Green

Director, Waste Management Division

U.S. EPA Region IV

9/26/02

Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

NAS Cecil Field (U. S. EPA ID No. FL5 170 022 474) is located 14 miles southwest of Jacksonville, Florida, as shown on Figure 2-1. The majority of NAS Cecil Field is located within Duval County and the southernmost part of the facility is located in Clay County. NAS Cecil Field was established in 1941 and provided facilities, services, and material support for the operation and maintenance of naval weapons, aircraft, and other units of the operation forces as designated by the Chief of Naval Operations. Since the closure of NAS Cecil Field in September 1999, most of the facility has been transferred to the Jacksonville Port Authority and the City of Jacksonville. According to the reuse plan, the facility will have multiple uses but will be used primarily for aviation- related activities.

OU 12, Site 42 consists of the contaminated soil identified at the Former Boiler House/ Steam Plant and General Storehouse. As shown on Figure 2-2, Site 42 is located in the YWWA on former "B" Street, near former Mariner Street. The steam plant and storehouse buildings were demolished about 40 years ago and all that remains are foundations and concrete rubble. A coal storage area was located on the eastern side of the steam plant. A railroad spur once served the buildings, but it was removed decades ago. A small block structure, Building 311, is located at the western end of the steam plant foundation. This building was built in 1959 and was used for munitions storage but is not empty. Currently, the site is overgrown with vegetation and is surrounded by undeveloped or overgrown land.

Soil contaminated with polynuclear aromatic hydrocarbons (PAHs) was delineated [Tetra Tech NUS, Inc. (TtNUS), 2001a] and excavated to residential levels and disposed off- site as part of an IRA (CH2M Hill, 2001).

The name of the site has been changed over the course of its investigation. In January 1999, following an Environmental Baseline Survey (EBS) [ABB Environmental Services, Inc. (ABB-ES), 1994] and Sampling and Analysis Outline and Report (SAOR) [Harding Lawson Associates (HLA), 1999], the site was designated as Potential Source of Contamination (PSC) 42. In May 2001, following additional investigations and the IRA, the BCT re-designated the area as Installation Restoration (IR) Site 42 within OU 12.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The first environmental studies for the investigation of waste handling and/or disposal sites at NAS Cecil Field were conducted between 1983 [Geraghty and Miller, Inc. (G&M), 1983] and 1985 (G&M, 1985).

These studies were followed in 1985 by an Initial Assessment Study (IAS) [Envirodyne Engineers (EE), 1985]. A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed in 1988 (HLA, 1988).

NAS Cecil Field was placed on the National Priorities List (NPL) by the U. S. EPA and the Office of Management and Budget in December 1989. A Federal Facility Agreement (FFA) for NAS Cecil Field was signed by the FDEP, U. S. EPA, and the Navy in 1990. Following the listing of NAS Cecil Field on the NPL and the signing of the FFA, remedial response activities at the facility have been completed under CERCLA authority. OU 12 is one of twelve OUs that have been identified. A Hazardous and Solid Waste Amendments (HSWA) permit was issued on October 13, 1996. The HSWA permit was renewed on August 25, 2000 and is still in effect. Since the State of Florida has now final authorization to administer the RCRA program, the Navy is currently in the process of applying for a new permit with FDEP.

2.2.1 Site 42 History

The steam plant and storehouse buildings serviced the Naval Air Gunnery School (NAGS), that occupied much of the southwestern portion of YWWA during the late 1940s and early 1950s. A railroad spur once served the buildings, but it was removed decades ago. Building 311, located at the western end of the steam plant foundation, was built in 1959 and was used for munitions storage but is now empty.

There is little information on the operations history of the steam plant and storehouse because the buildings were demolished in the late 1950s or early 1960s. The storehouse appears to have had a solid slab foundation and a loading dock along the railroad siding. The steam plant also appears to have had a solid foundation. Based on the presence of the coal pocket and the lack of fuel tanks on existing drawings or aerial photos, it is presumed that coal was used to fire the boilers. The railroad spur that serviced the buildings also appears to have been removed during the NAGS demolition.

2.2.2 Site Investigations

The following investigations and studies have been conducted in and around Site 42:

- 1993-1999 - During the BRAC EBS, no specific environmental concerns were identified (ABB-ES, 1994). The EBS report speculated about the presence of an underground storage tank (UST) but none was found. The report also recommended further investigation. A Phase II Sampling and Analysis program was conducted and the results of this investigation were presented in the 1999 YWWA SAOR (HLA, 1999). This report indicated several site locations with soil concentrations of benzo(a) pyrene (BaP), arsenic, and barium in excess of the FDEP Soil Cleanup Target Levels (SCTLs) (FDEP, 1999) or NAS Cecil Field site-specific Inorganic Background Data Set (IBDS) values (HLA, 1998).
- 1999-2001 - Additional investigations were conducted at PSC 42 to delineate the horizontal and vertical extent of soil contamination and to evaluate groundwater quality. As shown on Figure 2-3, a total of 149 soil samples were collected and analyzed over 12 phases from April 1999 to April 2001 (TtNUS, 1999, 2000, and 2001c). In addition, two monitoring wells were installed in the areas of greatest soil contamination and one round of groundwater samples were collected from these wells and analyzed. As a result of these investigations, BaPEq, antimony, arsenic, barium, chromium, and TRPH were identified as soil chemicals of concern (COCs), as concentrations of these chemicals in soil exceeded the FDEP SCTLs for residential exposure or leachability to groundwater or the IBDS values. No groundwater COCs were identified.
- 2001 - An Action Memorandum for PSC 42 was prepared in January 2001 to identify the need for an IRA and to describe and estimate the costs of the proposed IRA (TtNUS, 2001a). The proposed IRA included the excavation and off-site disposal of soil contaminated in excess of Preliminary Remedial Goals (PRGs) in a time-critical manner. This IRA would allow for unrestricted site use.
- 2001 - IRA. During March 2001, 2,420 tons (1,390 cubic yards) of soil were excavated from eleven areas of contamination (CH2M Hill, 2001). The depth of excavation ranged from 1 foot below ground surface (bgs) to the groundwater table at approximately 6 feet bgs. Prior to excavation, the soil was characterized for disposal. Following excavation, the soil was transported and disposed off site on the same day that the removal occurred. The excavation was then backfilled with certified clean fill prior to being graded and seeded.
- 2002 - A Technical Memorandum for No Further Action was prepared in March 2002. This document summarized the results of previous investigations, discussed the additional investigations, and described the nature and extent of contamination (TtNUS, 2002a). This document also presented human health and ecological Preliminary Risk

Evaluations (PREs), summarized the IRA, and recommended that Site 42 be designated as an NFA site.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Public notice of the availability of the Proposed Plan (TtNUS, 2002b) was placed in the Metro section of the *Florida Times-Union* on June 7, 2002. A 30-day comment period was held from June 7, 2002 through July 7, 2002. The results of the Technical Memorandum for No Further Action (TtNUS, 2002a) and PRE were also presented and discussed at a Restoration Advisory Board (RAB) meeting held in July 2002, during which comments were solicited from the community. No public comments have been received.

Documents pertaining to OU 12, Site 42 are available to the public at the Information Repository located at Building 907, 13357 Lake Newman Street, Cecil Commerce Center, Jacksonville, Florida 32252 [Telephone (904)573-0336]. This ROD will become part of the Administrative Record File [NCP §300.825(a)(2)].

2.4 SCOPE AND ROLE OF OPERABLE UNIT

The environmental concerns at NAS Cecil Field are complex. As a result, work at the 24 sites in the IR Program has been organized into twelve OUs. More than 200 other areas are undergoing evaluation in the BRAC and petroleum programs.

This ROD is the final action for OU 12, Site 42. Final RODs have been approved for OU1 through OU 4; OU 5, Site 14; OU 6 through OU 8; and OU 9, Sites 36 and 37. An RI, BRA, and FS have also been prepared for OU 5, Site 15 but the FS is currently being re-evaluated. RI and FS reports are currently in progress for OU 9, Sites 57 and 58, and OU 10, Sites 21 and 25. RI and FS reports have been completed for OU 11, Site 45, and decision documents are being prepared for that site. An Action Memorandum is being prepared for OU 5, Site 49. IRAs have been completed for OU 12, Sites 32, 42, 44, and OGC and decision documents are being prepared for these sites.

Contaminant sources, detected concentrations, fate and transport, contaminated media, and geologic and hydrogeologic conditions of OU 12, Site 42 are discussed in Sections 2.0, 5.0, and 6.0 of the OU 12, Site 42 Technical Memorandum for No Further Action (TtNUS, 2002a). These site characteristics are summarized in the following paragraphs.

2.5.1 Geology and Hydrogeology

Site 42 is located approximately 0.8 mile north of the area of contaminated groundwater associated with Operable Unit (OU) 10, Site 21. No site-specific subsurface investigation was performed as part of the PSC 42 investigation; however, the geologic and hydrogeologic characteristics of the site are expected to be similar to those described in the RI Report for OU 10, Site 21 (TtNUS, 2001b).

2.5.2 Nature and Extent of Contamination

2.5.2.1 Soil

Table 2-1 presents a summary of pre-IRA soil analytical data and Figure 2-3 shows sampling locations. As shown on Table 2-1, carcinogenic PAHs (cPAHs) and TRPH were detected in soil at concentrations greater than the FDEP SCTLs for residential exposure and leachability to groundwater (FDEP, 1999). Several metals, including antimony, arsenic, barium and chromium, were also detected at concentrations greater than the residential SCTLs or the NAS Cecil Field site-specific IBDS values (HLA, 1998). Accordingly, these were identified as soil COCs.

It should be noted that the maximum concentration of chromium of 257 milligrams per kilogram (mg/kg), as detected in October 1999 (Phase III) in sample CEF-P42-SS301-01, was not confirmed by the results from sample CEF-P42-SS915-01 that was collected at the same location in March 2001 (Phase XII) and indicated a chromium concentration of 3 mg/kg. Since the previously detected concentration of 257 mg/kg was the only recorded exceedance of the FDEP SCTLs and IBDS, it was concluded that chromium did not in fact exceed these criteria and should, therefore, not be considered as a COC.

Because BaP was the principal cPAH detected in the Site 42 soil, the BCT agreed that cPAHs detected in the soil of that site should be regarded as a family of compounds and that their concentrations should be expressed in terms of BaP equivalent (BaPEq). For a given soil sample, a total BaPEq concentration was derived using detected concentrations of individual cPAHs and toxicity equivalent factors (TEFs), as established by U. S. EPA (U. S. EPA, 1995).

A statistical evaluation was conducted to determine the areas of soil requiring removal so that the sitewide 95-percent upper confidence level (UCL) of the remaining concentrations of each COC is equal to or below the SCTLs for direct residential exposure. The results of this statistical evaluation are presented in the Action Memorandum for PSC 42 (TtNUS, 2001a). Eleven areas, totaling 20,888 square feet (ft²) in size were identified as requiring removal to a depth ranging from 1 foot bgs to the groundwater table, or 6 feet bgs.

An IRA was conducted in March 2001 (CH2M Hill, 2001). During this removal action approximately 2,420 tons of soil were excavated and disposed offsite so that the 95-percent UCLs of the residual concentrations of COCs in soil were equal to or less than the FDEP SCTLs for residential exposure. In addition, areas of soil with concentrations of COCs greater than either the FDEP SCTLs for leachability to groundwater or three times the residential SCTLs were also excavated and disposed offsite. Areas of excavation are illustrated on Figure 2-4. Excavated areas were backfilled with certified clean fill material brought in from the Coxwell's Crystal Springs Pit.

As part of the Technical Memorandum for No Further Action (TtNUS, 2002a), a statistical analysis was performed to predict post-IRA soil analytical data, including minimum and maximum detected concentrations, arithmetic means of detected concentrations, and 95-percent UCLs of detected concentrations of BaPEq, antimony, arsenic, barium, and TRPH. To predict soil concentrations in the excavated and backfilled areas, analytical data from the clean fill material was used. If no fill analytical data was available for a particular chemical, it was assumed that the concentration of that chemical was equal to one half the detection limit. As summarized on Table 2-2, the results of this statistical analysis showed that the 95-percent UCL of remaining concentrations of COCs have been reduced below the FDEP SCTLs for residential exposure.

2.5.2.2 Groundwater

Table 2-3 summarizes the analytical results of groundwater investigations at Site 42 and Figure 2-3 shows sampling locations. As can be seen from Table 2-3, detected concentrations did not exceed the FDEP Groundwater Cleanup Target Levels (GCTLs). Therefore, no groundwater COCs were identified for Site 42.

2.6 CURRENT AND POTENTIAL FUTURE SITE USES

Site 42 is not currently in use. According to the reuse plan, this area will be used for recreational purposes.

2.7 SUMMARY OF SITE RISKS

2.7.1 Human Health Risk Assessment

The results of pre-IRA soil investigations at Site 42 identified BaPEq, antimony, arsenic, barium, and TRPH as human health COCs. However, as summarized on Table 2-2, a statistical analysis of post-IRA soil analytical data showed that the 95-percent UCL of remaining concentrations of these COCs is lower than the FDEP SCTLs for residential exposure. In addition, groundwater investigations have not identified any human health COCs and areas of soil with COCs concentrations greater than the FDEP SCTLs for leachability to groundwater have been removed and disposed offsite, thus eliminating potential sources of future groundwater contamination. Therefore, there is no longer any unacceptable human health risk associated with Site 42.

2.7.2 Ecological Risk Assessment

A screening-level ecological risk assessment was conducted as part of the Technical Memorandum for No Further Action to evaluate the potential risks to ecological receptors at Site 42 (TtNUS, 2002a).

Six PAHs [anthracene, BaP, fluoranthene, naphthalene, phenanthrene, and pyrene] and six metals (aluminum, antimony, chromium, iron, lead, and zinc) were retained as ecological chemicals of potential concern (COPCs) in surface soil because maximum detected concentrations of these chemicals exceeded the U. S. Region IV ecological screening values (U. S. EPA, 1999 and 2001). An additional ten PAHs [1-methylnaphthalene, 2-methylnaphthalene, benzo(a) anthracene, benzo(g, h, i) perylene, benzo(b) fluoranthene, benzo(k) fluoranthene, chrysene, dibenzo(a, h) anthracene, fluorene, and ideno(1,2,3-cd) pyrene] were also retained as ecological COPCs in surface soil because U. S. EPA Region IV screening levels were not available for these compounds.

These COPCs were assessed in a less conservative Step 3A evaluation conducted in accordance with the following documents: U. S. EPA Ecological Risk Assessment Guidance for Superfund (U. S. EPA, 1997), U. S. EPA Region IV Ecological Risk Assessment Bulletins - Supplement to RAGs (U. S. EPA, 1999b), U. S. EPA Amended Guidance on Ecological Risk Assessment at Military Bases (U. S. EPA, 2000), and the Navy Policy for Conducting Ecological Risk Assessments (Department of the Navy, 1999).

The results of the Step 3A analysis indicate that the chemicals detected in the surface soil at Site 42 present negligible or low risks to ecological receptors.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU 12, Site 42 (TtNUS, 2002b) was released for public comment on June 7, 2002. The Proposed Plan identified NFA as the preferred remedy. The public was invited to comment during a 30-day period extending from June 7 to July 7, 2002. No public comments were received during this period and no changes to the proposed remedy, as originally identified in the Proposed Plan, have been made as a result of public comments.

TABLE 2-1

SUMMARY OF PRE-IRA SOIL ANALYTICAL DATA
OU 12, SITE 42 RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 2

CHEMICAL	Frequency of Detection	Range of Concentrations	Average Concentration ¹	Location of Maximum	FDEP Residential SCTL ²	FDEP Leachability SCTL ²	IBDS Value ³
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs) (µg/kg)							
1-Methylnaphthalene	49/137	38-90,200	9,061	CEF-P42-SS-613-02	23,000	6,000	NA
2-Methylnaphthalene	63/137	74-187,000	12,836	CEF-P42-SS-613-02	68,000	2,200	NA
Acenaphthene	48/137	22.6-239,000	11,897	CEF-P42-SS-613-02	1,900,000	2,100	NA
Acenaphthylene	31/137	77-10,900	2,464	CEF-P42-SS-402-01	1,100,000	27,000	NA
Anthracene	39/137	9.9-240,000	9,377	CEF-P42-SS-613-02	18,000,000	2,500,000	NA
Benzo(a)anthracene	78/137	10-93,600	4,664	CEF-P42-SS-613-02	1,400	3,200	NA
Benzo(a)pyrene	76/137	8.9-55,800	2,698	CEF-P42-SS-613-02	100	8,000	NA
Benzo(b)fluoranthene	83/137	14.5-44,200	2,562	CEF-P42-SS-613-02	1,400	10,000	NA
Benzo(g,h,i)perylene	75/137	11-24,900	1,596	CEF-P42-SS-402-01	2,300,000	32,000,000	NA
Benzo(k)fluoranthene	76/137	7.3-33,600	1,726	CEF-P42-SS-613-02	15,000	25,000	NA
Chrysene	79/137	6-83,200	3,369	CEF-P42-SS-613-02	140,000	77,000	NA
Dibenzo(a,h)anthracene	31/137	11-26,400	1,340	CEF-P42-SS-402-01	100	30,000	NA
Fluoranthene	83/137	19.5-248,000	10,082	CEF-P42-SS-613-02	2,900,000	1,200,000	NA
Fluorene	29/137	6.4-53,100	3,329	CEF-P42-SS-613-02	2,200,000	160,000	NA
Indeno(1,2,3-cd)pyrene	64/137	7.4-29,400	2,090	CEF-P42-SS-613-02	1,500	28,000	NA
Naphthalene	44/137	52-68,700	8,197	CEF-P42-SS-613-02	40,000	1,700	NA
Phenanthrene	67/137	15-216,000	11,307	CEF-P42-SS-613-02	2,000,000	250,000	NA
Pyrene	81/137	12.2-165,000	7,903	CEF-P42-SS-613-02	2,200,000	880,000	NA
PESTICIDES & PCBs (µg/Kg)							
4,4'-DDE	1 / 4	76	76	CEF-P42-SS-213-01	3,300	18,000	NA
4,4'-DDT	2/4	60-342	201	CEF-P42-SS-008-01	3,300	11,000	NA
INORGANIC COMPOUNDS (mg/kg)							
Aluminum	15/15	30.9-3,320	1,342.2	CEF-P42-SS-009-01	72,000	NC	4,430
Antimony	24/94	0.34-55.05	5.5	CEF-P42-SS-613-02	26	5	9.44
Arsenic	39/100	0.47-29.2	7.11	CEF-P42-SS-807-02	0.8	29	2.04

TABLE 2-1

**SUMMARY OF PRE-IRA SOIL ANALYTICAL DATA
OU 12, SITE 42 RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 2 OF 2**

CHEMICAL	Frequency of Detection	Range of Concentrations	Average Concentration ¹	Location of Maximum	FDEP Residential SCTL ²	FDEP Leachability SCTL ²	IBDS Value ³
INORGANIC COMPOUNDS (mg/kg) (continued)							
Barium	84/93	1.9- 336.5	34.3	CEF-P42-SS-613-02	110	1,600	14.4
Cadmium	1/15	0.71	0.71	CEF-P42-SS-008-01	75	8	1.72
Chromium	49/74	0.57- 257⁴	10.7	CEF-P42-SS-301-01	210	38	7.75
Cobalt	9/15	0.04-2	1.2	CEF-P42-SS-006-01	4,700	NC	3.11
Copper	15/15	1.6-23.1	8.7	CEF-P42-SS-009-01	110	NC	5.97
Iron	15/15	24.6-10,400	2,745.8	CEF-P42-SS-001-01	23,000	NC	1,490
Lead	44/124	0.51- 637	56.7	CEF-P42-SS-302-01	400	NC	197
Manganese	15/15	0.78-353	48.7	CEF-P42-SS-008-01	1,600	NC	22
Nickel	13/15	1.0-10.9	3.2	CEF-P42-SS-008-01	110	130	3.89
Selenium	12/15	0.37-1.5	0.8	CEF-P42-SS-006-01	390	5	1.68
Silver	2/15	1.8-1.9	1.8	CEF-P42-SS-009-01	390	17	2.13
Vanadium	14/15	0.88-7.1	3.6	CEF-P42-SS-006-01	15	980	6.3
Zinc	14/15	6.6-494	103	CEF-P42-SS-008-01	23,000	6,000	37
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) (mg/kg)							
TRPH	42/79	7.49- 35,500	1,513.2	CEF-P42-SS-402-01	340	340	NA

NOTES:

Shaded values denote exceedance of FDEP SCTLs or IBDS values

NA Not Available

NC No Criterion

µg/kg Micrograms per kilogram

mg/kg Milligrams per kilogram

1. Mathematical average of detected concentrations

2. Florida Department of Environmental protection (FDEP) Soil Cleanup Target Levels, Florida Administrative Code (FAC) 62-777 (FDEP, 1999)

3. NAS Cecil Field site-specific Inorganic Background Data Set (IBDS) (HLA, 1998)

4. Maximum concentration detected in October 1999 (Phase III). This concentration was not confirmed by re-sampling at same location (CEF-P42-SS915-01) in March 2001 (Phase XII) that indicated a concentration of 3 mg/kg.

TABLE 2-2

**SUMMARY OF POST-IRA SOIL ANALYTICAL DATA
OU 12, SITE 42 RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Chemical	Minimum Detected Concentration	Maximum Detected Concentration	95-Percent UCL ¹ Concentration	FDEP Residential SCTL ²	FDEP Leachability SCTL ²	IBDS ³
Polynuclear Aromatic Hydrocarbons (PAHs) (µg/kg)						
BaPEq	1.8	393	62.08	100	8,000	NA
INORGANIC COMPOUNDS (MG/KG)						
Antimony	0.1	4.3	1.36	26	5	9.44
Arsenic	0.2	5.9	0.91	0.8	29	2.04
Barium	0.5	49.9	9.03	110	1,600	1.72
Total Recoverable Petroleum Hydrocarbons (TRPH) (mg/kg)						
TRPH	4.3	279	49.38	340	340	NA

NOTES:

BaPEq Benzo(a)pyrene equivalent

NA Not available

µg/kg Micrograms per kilogram

mg/kg Milligrams per kilograms

1 95-percent upper confidence level of detected concentrations

2 Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) (FDEP, 1999)

3 NAS Cecil Field site-specific Inorganic Background Data Set (IBDS) (HLA, 1998)

TABLE 2-3

SUMMARY OF GROUNDWATER ANALYTICAL DATA
OU 12, SITE 42 RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	FDEP GCTL*	IBDS VALUE**	CEF-P42- GW-01S	CEF-P42-GW-02S	
				Sample	Duplicate
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs) (ug/L)					
1-METHYLNAPHTHALENE	20	NA	1 U	1 U	1 U
2-METHYLNAPHTHALENE	20	NA	1 U	1 U	1 U
ACENAPHTHENE	20	NA	1 U	1 U	1 U
ACENAPHTHYLENE	210	NA	2 U	2 U	2 U
ANTHRACENE	2,100	NA	0.15 U	0.15 U	0.15 U
BENZO(A)ANTHRACENE	0.2	NA	0.15 U	0.15 U	0.15 U
BENZO(A)PYRENE	0.2	NA	0.15 U	0.15 U	0.15 U
BENZO(B)FLUORANTHENE	0.2	NA	0.2 U	0.2 U	0.2 U
BENZO(G,H,I)PERYLENE	210	NA	0.2 U	0.2 U	0.2 U
BENZO(K)FLUORANTHENE	0.5	NA	0.15 U	0.15 U	0.15 U
CHRYSENE	4.8	NA	0.15 U	0.15 U	0.15 U
DIBENZO(A,H)ANTHRACENE	0.2	NA	0.25 U	0.25 U	0.25 U
FLUORANTHENE	280	NA	0.2 U	0.2 U	0.2 U
FLUORENE	280	NA	0.2 U	0.2 U	0.2 U
INDENO(1,2,3-CD)PYRENE	0.2	NA	0.15 U	0.15 U	0.15 U
NAPHTHALENE	20	NA	1 U	1 U	1 U
PHENANTHRENE	210	NA	0.15 U	0.15 U	0.15 U
PYRENE	210	NA	0.2 U	0.2 U	0.2 U
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) (mg/L)					
TRPH	5	NA	0.5 U	0.5 U	0.5 U
INORGANIC COMPOUNDS (ug/L)					
ANTIMONY	6	44.5	4	2.4 U	2.4 U
ARSENIC	50	7.1	3.4 U	3.4 U	3.4 U
BARIUM	2,000	88.2	37.0	48.6	49.5
CHROMIUM	100	18	16.9 U	15.8 U	16.4 U

NOTES:

ug/L = Micrograms per liter

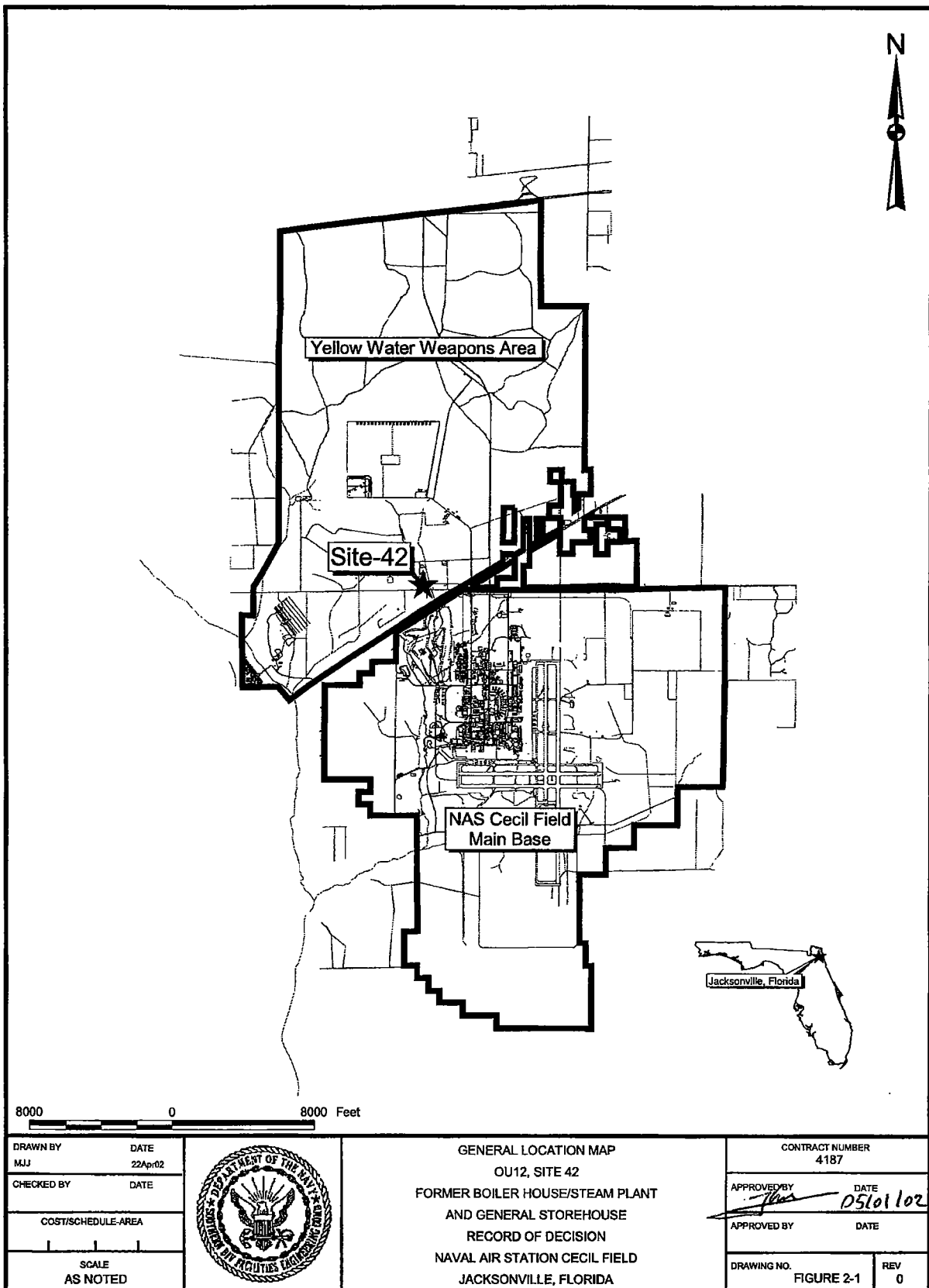
mg/kg = Milligrams per liter

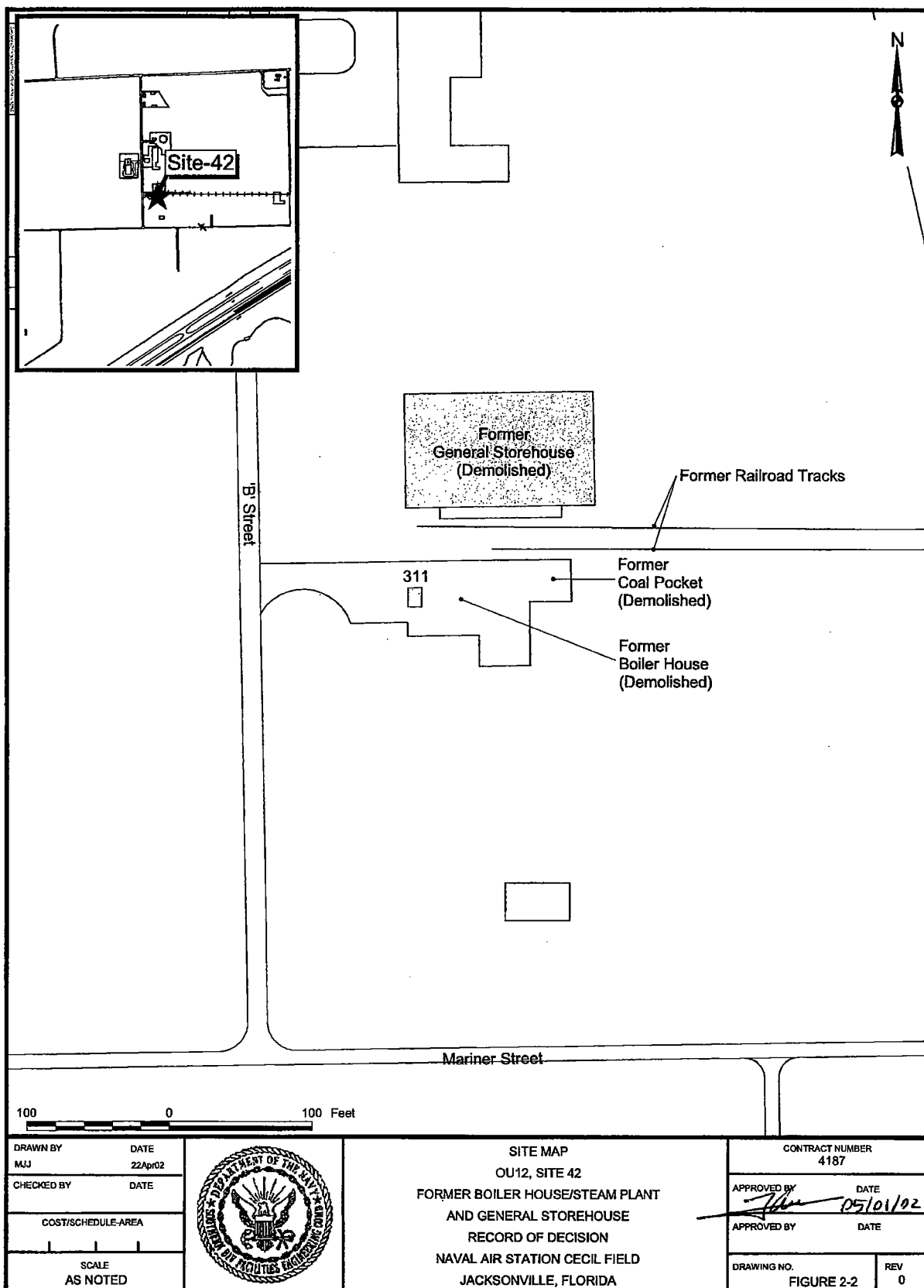
NA = Not available

U = Not detected at or above associated detection limit.

* FDEP groundwater cleanup target level, FAC 62-777 (FDEP, 1999).

** NAS Cecil Field Inorganic Background Data Set (HLA, 1998).





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